

REMARKS

Claims 1-28 are pending in the present application. In the Office Action mailed February 6, 2007, the Examiner rejected claims 9, 10, 13, and 25-28 under 35 U.S.C. §102(b) as being anticipated by Hackman et al. (USP 2,806,127). The Examiner next rejected claims 1-8, 11, and 12 under 35 U.S.C. §103(a) as being unpatentable over Hackman et al. Claims 9 and 14 were rejected under 35 U.S.C. §103(a) as being unpatentable over Denis (USP 3,934,110).

Claims 15-24 are allowed. Such allowance is appreciated.

The Examiner rejected claim 9 under 35 U.S.C. §102(b) as being anticipated by Hackman et al. While Applicant does not necessarily agree with the rejection, Applicant has nonetheless elected to amend claim 9 to further clarify what is being called for therein. As amended, claim 9 calls for, in part, a method of establishing a welding arc including the steps of introducing a wire to a desired weld area at an initial run-in speed that is less than or equal to a user selected wire feed speed and reducing the wire feed speed below the initial run-in speed before the wire feed speed reaches the user selected wire feed at weld stabilization. Applicant believes that, as amended, claim 9 and the claims dependent therefrom are patentably distinct over Hackman et al.

Hackman et al. teaches a system and method for controlling a welding process. The welding system includes a rod feed motor 16 that feeds a continuously-fed consumable electrode 10 through a welding gun 18 and toward a workpiece 20. *Hackman et al.*, Col. 4, lns. 51-54. The electrode 10 is fed at a predetermined inching speed (i.e., run-in speed) set by an inching speed adjustment 36 in a speed control circuit 38. *Hackman et al.*, Col. 4, lns. 66-69. When the electrode 10 strikes the workpiece 20, an arc is initiated and its presence is detected by arc detector 40. In response to arc initiation, arc detector 40 actuates speed control circuit 38 to change the speed of the rod feed motor 16 to normal full welding speed as determined by the setting of a weld speed adjustment 42 in the speed control circuit 38. *Hackman et al.*, Col. 4, ln. 69 – Col. 5, ln. 2. Hackman et al., however, does not teach or disclose that the feed speed of electrode 10 is reduced below the inching speed as is called for in claim 9. Rather, Hackman et al. teaches that the speed of the rod feed is increased from the inching speed upon detection of an arc initiation, not further reduced. As such, Hackman et al. fails to anticipate that which is called for in claim 9 and the claims dependent therefrom.

The Examiner also rejected claim 25 under 102(b) as being anticipated by Hackman et al., stating that Hackman et al. discloses “power source 24; wire feeder associated with 16; [and] means 38 for controlling a filler material delivery rate including a reduced rate prior to arc stabilization....” *Office Action*, February 6, 2007, p. 2. Applicant respectfully disagrees.

Specifically, Applicant believes that Hackman et al. fails to teach or disclose a means for controlling a filler material delivery rate that reduces the delivery rate without reversing a delivery direction based on welding arc initialization prior to arc stabilization, as is called for in claim 25.

As stated above, Hackman et al. teaches a system and method for controlling a welding process in which an electrode 10 is fed at a predetermined inching speed set by an inching speed adjustment 36 in a speed control circuit 38. *Hackman et al.*, Col. 4, lns. 66-69. When an arc is initiated and its presence is detected by arc detector 40, an arc detector 40 actuates speed control circuit 38 to change the speed of the rod feed motor 16 to normal full welding speed as determined by the setting of a weld speed adjustment 42 in the speed control circuit 38. *Hackman et al.*, Col. 4, ln. 69 – Col. 5, ln. 2. Thus, Hackman et al. teaches that the speed of the rod feed is increased upon detection of an arc initiation. This is not what is called for in claim 25, which calls for a means that reduces the delivery rate without reversing a delivery direction based on welding arc initialization prior to arc stabilization. Hackman et al. therefore teaches a system that performs a completely opposite control method from the welding system called for in claim 25. That is, Hackman et al. teaches a system that increases a feed rate of wire to a weld upon detection of arc initiation rather than reducing the feed rate. As such, that which is called for in claim 25, and the claims dependent therefrom, is patentably distinct over Hackman et al.

The Examiner also rejected claim 9 under 35 U.S.C. §103(a) as being unpatentable over Denis. As set forth above, Applicant has elected to amend claim 9 to further clarify what is being called for therein. As amended, claim 9 calls for in part, a method of establishing a welding arc that includes the steps of introducing a wire to a desired weld area at an initial run-in speed that is less than or equal to a user selected wire feed speed and reducing the wire feed speed below the initial run-in speed before the wire feed speed reaches the user selected wire feed at weld stabilization. Applicant believes that, as amended, claim 9 and the claims dependent therefrom are patentably distinct over Denis.

Denis discloses an arc starting and control system for a welding apparatus. An electrode 10 in the welding apparatus is fed toward a work piece 12 by means of an electrode feed motor 14. *Denis*, Col. 1, lns. 53-56. Upon detection of a contact between electrode 10 and work piece 12, the direction of the electrode feed motor 14 is reversed, causing the electrode 10 to be drawn upwardly and away from the work piece 12. *Denis*, Col. 2, lns. 12-29. This is not what is set forth in claim 9, which calls for introducing a wire to a desired weld area at an initial run-in speed that is less than or equal to a user selected wire feed speed and reducing the wire feed speed

below the initial run-in speed before the wire feed speed reaches the user selected wire feed at weld stabilization. Reversing direction of an electrode, as taught in Denis, is not reducing speed as called for in claim 9. There is simply no teaching or disclosure of reducing wire feed speed in Denis. As such, claim 9 and the claims dependent therefrom are patentably distinct over Denis.

The Examiner rejected claim 1 under 35 U.S.C. §103(a) as being unpatentable over Hackman et al., stating that Hackman et al. discloses a method with the steps called for in claim 1, but that claim 1 differs “in calling for a reduction of wire feed speed for a duration based on detecting the arc and on the user selected speed.” *Office Action*, supra at 3. The Examiner further stated that “figure 2 of the patent to Hackman et al. (2,806,127) shows how wire feed speed ramps up from a set inch rate to the user selected speed after an arc is detected at time ‘E’” and that “[i]t is considered obvious that the duration of time between ‘E’ and the full user-set welding wire feed rate will be a function of the value of the feed rate because it will clearly take a longer period of time to accelerate to a higher set speed and a shorter period of time to accelerate to a lower set speed.” *Id.* Applicant respectfully disagrees.

Applicant believes that the Examiner has misapplied the teachings of Hackman et al. as compared to what is called for in claim 1. Claim 1 calls for, in part, a method of generating a welding arc that includes the steps of initiating a wire feed speed and temporarily reducing wire feed speed for a period of time based on detection of arc initialization and a user selected speed. That is, as set forth in the present invention, wire is delivered to a desired weld area at a run-in speed that is often less than a user selected desired feed speed. *Application*, ¶29. When a short circuit or initial arc is detected, the feed speed is automatically adjusted to allow the arc to propagate from the initial arc to a sustainable, relatively stable, weld arc. *Application*, ¶30. After the initial arc has been detected, the wire speed is adjusted to a minimum value for a duration of time as determined by the desired wire feed speed. *Application*, ¶30.

Hackman et al. does not teach or suggest that wire feed speed is temporarily reduced based on detection of arc initialization as called for in claim 1. Rather, Hackman et al. merely teaches the basic concept of introducing an electrode 10 toward a workpiece 20 at a reduced inching speed (i.e., run-in speed) that is less than a normal full welding speed, which is clearly not what is called for in claim 1. That is, Hackman et al. teaches that electrode 10 is fed toward workpiece 20 at a predetermined inching speed set by an inching speed adjustment 36 in a speed control circuit 38 and, in response to arc initiation, an arc detector 40 actuates speed control circuit 38 to change the speed of the rod feed motor 16 to normal full welding speed. *Hackman et al.*, Col. 4, ln. 66 – Col. 5, ln. 2. Thus, Hackman et al. teaches that the speed of the rod feed is

increased upon detection of an arc initiation. This is not what is called for in claim 1, which sets forth that wire feed speed is temporarily reduced for a period of time based on detection of arc initialization. Such temporary reduction of wire feed speed based on detection of arc initialization is clearly not taught, disclosed, or suggested by Hackman et al., which instead teaches that the speed of a rod feed is increased upon arc initialization. As such, that which is called for in claim 1, and the claims dependent therefrom, is patentably distinct over Hackman et al.

In addition to the above amendments, Applicant has also amended claim 14 to correct an antecedent basis issue.

Therefore, in light of at least the foregoing, Applicant respectfully believes that the present application is in condition for allowance. As a result, Applicant respectfully requests timely issuance of a Notice of Allowance for claims 1-28.

Applicant appreciates the Examiner's consideration of these Amendments and Remarks and cordially invites the Examiner to call the undersigned, should the Examiner consider any matters unresolved.

Respectfully submitted,

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Dated: May 7, 2007
Attorney Docket No.: ITW7510.097-1

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¹The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 50-2623. Should no proper payment be enclosed herewith, as by credit card authorization being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 50-2623. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extensions under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 50-2623. Please consider this a general authorization to charge any fee that is due in this case, if not otherwise timely paid, to Deposit Account No. 50-2623.